July 4.

The President, Dr. Ruschenberger, in the chair.

Seven members present.

A paper entitled "Description of a New Species of Ægiale, and Notes on some other Species of North American Lepidoptera," by Herman Streeker, was presented for publication.

July 11.

The President, Dr. Ruschenberger, in the chair.

Thirteen members present.

July 18.

The President, Dr. Ruschenberger, in the chair.

Twenty-one members present.

Halloysite from Indiana.—Mr. E. Goldsmith remarked that a considerable deposit of a clay-like mineral has been observed near Huron, Lawrence County, Indiana. He had been informed that the deposit is nine feet thick; this, however, seems to be exaggerated, since Prof. E. T. Cox, in the 6th Annual Report of the Geological Survey of Indiana, makes it but four to six feet. It occurs in the carboniferous formation, 103 feet below the surface. Its roof is the millstone grit.[1] The floor is reported to be iron ore four feet thick. In regard to the breadth and length nothing seems known. In the Main Exhibition Building, also in the Mineral Annex of the International Centennial Exhibition, an *exposé* of this fine porcelain ore is made. Having been informed that Prof. Cox had called it Indianite, he had made an investigation of its physical and chemical properties before seeing any notice of the mineral in print.

The substance is amorphous; fracture subconchoidal; thick pieces are perfectly opaque; on the edges some light passes through; it is, therefore, subtranslucent, but the material becomes transparent if lying in water, of which it absorbs much. At the same time it cracks into small sharp-edged fragments. These, when taken out of the water and dried, lose the transparency, and become subtranslucent again. Lustre waxy, in some

[1] The stratification is illustrated by a diagram in the same volume.

places dull; the lustre increases if the substance is rubbed with a smooth harder material. He had noticed irregular cracks which traverse the specimens. Streak colorless; its cohesion is weak; H = 2.5; S. G. = 2.16. It is odorless, and adheres somewhat to the tongue. Color, white. The blowpipe reactions indicated the presence of water, alumina, and silica, and nothing else could be detected in the qualitative analysis in the wet way.

The "air-dry" substance, having been very finely pulverized, was heated in a platinum crucible at a white heat over a Bunsen-burner until two consecutive weighings were equal. It lost, thus treated, 24.15 per cent. of water. Through the above-described properties, it is easy to determine the name of the species, for Pholerite contains 15 per cent. of water; Kaolinit about 13 per cent.; Halloysite about 26 per cent.; and Samoite 30 per cent. The species is Halloysite; but, in order to be positive as regards the ratios of the other elements, he had requested Mr. W. H. Dougherty to make the quantitative determinations of the constituents. This analyst found, by experiment, that boiling sulphuric acid is the best decomposer of this mineral, and having worked repeatedly with other decomposers without satisfactory results, the sulphuric acid plan was adopted. The samples analyzed were "air-dry," the normal condition of the mineral in nature.

The result of the quantitative analysis is as follows:—

Silica . . .	38.30	per cent., which contains	20.425	per cent.	of oxygen.
Alumina . .	35.20	"	"	"	16.408	"	"
Water . . .	25.74	"	"	"	22.880	"	"

The oxygen ratios of the three oxides—

$$\ddot{S}i : \ddot{A}l : \dot{H} = 4 : 3 : 4$$

nearly, which affords the formula—

$$\ddot{A}l\,\ddot{S}i^{2} + 4\dot{H}.$$

This formulated expression requires—

$\ddot{S}i$ = 40.6 per cent.; $\ddot{A}l$ = 34.9 per cent.; $\dot{H}$ = 24.4 per cent.

In the list of analyses of Halloysite, reprinted in Dana's Descriptive Mineralogy, we find that the amount of water observed by the authors varies between 16 per cent. and 26 per cent., the former number having been obtained on drying the substance at 100° C. prior to the determination of the water. That Mr. Dougherty found more water than he had obtained is due to the fact that the former gentleman used the blast for removing the water.

Prof. E. T. Cox states in his report that this mineral had been analyzed by J. Lawrence Smith, M.D., with this result:—

$\ddot{S}i$ = 45.90 per cent.; $\ddot{A}l$ = 40.34 per cent.; $\dot{H}$ = 13.26 per cent.;

which is the composition of Kaolinite; but how this analysis had been performed, and especially why only 13.26 per cent. of $\dot{H}$ had

been obtained, the reader is left uninformed. He presumed that the mineral sample must have been prepared previous to ignition, or, in other words, the sample was dried strongly, and no account taken of the loss sustained. Under such conditions the quantity of $\dot{H}$ is less, whilst the other constituents become more.

The reason why this mineral is a new species, and not Kaolinite, Prof. E. T. Cox endeavors to explain in this way: "Kaolin is entirely derived from feldspar and feldspatic rocks, such as granite and porphyry, etc.; but the porcelain clay of Lawrence County has resulted from the decomposition, by chemical water, of a bed of limestone and the mutual interchange of molecules in solution, brought about by chemical precipitation and affinity."

The proofs, however, have been omitted, and, therefore, the view cannot be accepted, since Bischof (in his Chemische Geology, B. II., p. 428) has shown that the various clays are derived from the decomposition of feldspar.

Retardation of Bloom in an Herbaceous Plant.—Mr. Thomas Meehan made note of a plant of *Senecio Jacobæa*, which in his garden did not bloom till fifteen years old, in this respect somewhat rivalling the Century plant, *Agave Mexicana*, which sometimes flowered at that age.

Mr. Martindale reported the *Senecio* as being found among the ballast plants at Kaighn's Point, and had seen plants at least two years old that had not bloomed.

Cross Fertilization in Campanula.—Mr. Meehan remarked that when the subject of insect cross-fertilization was before the Academy a few evenings since, he admitted that some plants seemed to require the aid of insects, and he had conceded *Campanula* as being of this small list of exceptions. Since then, having had reason to suspect this conclusion, he had confined flowers of *C. pulcherrima* in fine gauze bags, and they had seeded perfectly. He had no hesitation in saying that those who had claimed *Campanula* as illustrating the necessity for cross-fertilization by insect agency were wrong. He admitted that it was difficult to understand from the structure alone how self-fertilization was effected, but that it was so effected was certain, and careful study would no doubt explain it Composites were claimed as proving cross-fertilization—it might explain the *Campanula* case to note how self-fertilization in chicory was effected. He had recently been able to discover this. The chicory has blue pistils as well as blue corollas, and as the rather large pollen grains are of a pure white, they afford an excellent chance for observation. The whole growth and fertilization is over in about a couple of hours, so that one need not spend much time in the study. About 6 o'clock in the morning the pistil with the closed lobes elongates, pushing through the mass of pollen, and carrying quantities with it, all over its whole surface. About an hour after, the lobes expand, and the pollen falls into the cleft and on

to the stigmatic surface. The flowers close entirely by nine or ten o'clock of the same day, the work of fertilization being wholly finished. Pollen-eating insects visit the flowers, but these can be kept away during the few hours of observation required, and it would be found that all the flowers had pollen on the stigmatic surfaces nevertheless.

Variation in the Sensitive Fern, Onoclea sensibilis.—Referring to some specimens on the table presented by Mr. Martindale, Mr. MEEHAN remarked that it was the variety *O. s. obtusilobata* of Gray's Manual, and afforded morphologists a rare and excellent opportunity to study the transitional stages by which the male became the fertile frond.

The resignation of Mr. Geo. W. Tryon, Jr., as Curator, was read and accepted, and the following minute ordered to be recorded :—

The Academy, in accepting the resignation of Mr. Tryon as Curator, desires to express its gratitude for the services he has long and faithfully rendered, and its sincere regret that he is unable to continue his official relations in the position which he has so efficiently filled.

JULY 25.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-five members present.

The following papers were presented for publication :—

"Report on the Hydroids collected on the Coast of Alaska and the Aleutian Islands by Wm. H. Dall, U.S. Coast Survey and party, from 1871 to 1874 inclusive." By S. F. Clarke. With an Introduction by W. H. Dall.

"Description of a Collection of Fossils made by Dr. Raimondi in Peru." By Wm. M. Gabb.

"The Rocks known as Mexican Onyx." By Mariano Barcena.

Supernumerary Anterior Extremity in a Brahmin Bull.—Dr. ALLEN presented drawings of a supernumerary anterior extremity in a Brahmin bull recently on exhibition in Philadelphia.

The deformation consists of a limb exserted from the body at the left shoulder. The extremity is apparently complete, possessing the shoulder, leg, and remaining portions of the limb.

The foot presents its palmar aspect forwards, and bears three distinct digits. The hoof upon each digit is long, compressed laterally, and slightly curved from before backwards. The central digit is the broadest, is slightly longer than either of the